

TECHNICAL REVIEW DOCUMENT FOR RENEWAL OF OPERATING PERMIT 95OPBO059

to be issued to:

University of Colorado at Boulder, Power House
Boulder County
Facility ID 0130553

Cathy Rhodes
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I. Purpose

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered by the renewal Operating Permit proposed for this site. The original operating permit was issued December 1, 1998 and expires on December 1, 2003. This document is designed for reference during review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted July 22, 2002. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

II. Source Description

The University of Colorado at Boulder (CU) consists of a Power House, a service building, a heating plant for a dormitory known as Williams Village, and miscellaneous insignificant activities around campus. The Power House is a co-generation plant producing electricity and steam. The Power House has two 16.5 MW turbines with the capability of firing either natural gas or No. 2 fuel oil. The exhaust gasses from the turbines are routed through two duct heaters with each unit having its own stack. The Power House also has two standby boilers which can fire either natural gas or No. 2 fuel oil and serve the purpose of backup steam generators to the heat recovery steam generators. Each backup unit has its own stack. CU requested separate Operating Permits for the Power House and the heating plant for Williams Village. The service building is classified as an insignificant source of emissions.

The Power House is located at the southeast corner of 18th Street and Colorado Avenue, which is approximately in the center of the CU campus. The area in which the plant operates is currently designated as attainment/maintenance for carbon monoxide, particulate matter less than 10 μm and ozone. There are no affected states within 50 miles of the plant. The Federal Class I designated areas within 100 kilometers of the plant are Rocky Mountain National Park, Rawah Wilderness Area, and Eagle's Nest Wilderness Area.

Powerhouse facility emissions are as follows:

<u>Pollutant</u>	<u>Facility-wide Potential* (tpy)</u>	<u>Facility-wide Actual** (tpy)</u>
NO _x	< 250	116
CO	90	18.07
VOC	62.6	Negligible
SO ₂	56.7	Negligible
PM	24.2	Negligible
PM ₁₀	24.2	Negligible
HAPs	0.62	Negligible

* Based on worst case emissions for burning either primary (natural gas) or secondary fuel (No. 2 fuel oil)

** Actual emissions are based on the latest APEN on file

This facility along with Williams Village are considered a single source for NSR purposes. Potential emissions and actual emissions for the Power House and the heating plant at Williams Village are as follows:

<u>Pollutant</u>	<u>Potential Emissions (tpy)</u>	<u>Actual Emissions (tpy)</u>
NO _x	296.8	120.13
CO	117.8	19.10
VOC	67.3	0.11
SO ₂	562.2	0.64
PM	28.9	0.45
PM ₁₀	26.7	0.44
HAPs	0.62	0.62

1. Discussion of Modifications Made

Source Requested Modifications

The permittee requested the following revisions to the Operating Permit in their renewal application.

Section II

Condition 1.1 - Emission factors for NO_x and CO are added for estimating emissions during simple cycle mode operation. Note: The CEMS will not be available during simple cycle operation of the turbines. During such operation, for purposes of reporting excess emissions for NSPS Subpart GG, the permittee proposed to use these emission factors to estimate the magnitude of the excess emissions, and to report simple cycle operation as an upset condition. The permittee has submitted a request to the EPA for an alternative monitoring method for the Subpart GG NO_x emission limits. If the EPA approves such request during their 45 day review period, the Division will include the alternate monitoring method in the issued renewal Operating Permit.

Conditions 2.7, 2.8, 3.7, 3.8, 4.3, 4.4, 5.3 and 5.4 are revised to clarify that monitoring for opacity must commence within 24 hours of reaching normal operation using No. 2 fuel oil, and to define “startup” for purposes of when to commence monitoring.

Condition 1.3 is revised to change the basis of the heat content from lower to high gross value.

Other Modifications

In addition to the changes requested by the permittee, the Division has included changes to make the permit consistent with recently issued permits, to include comments made by the EPA on other Operating Permits, to reflect updated and current Regulatory language, as well as to correct errors or omissions identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments, to the Williams Village Operating Permit:

Page following Cover Page

The citation (above “issued to” and “plant site location”) provided the incorrect title for the state act. The title is changed from “Colorado Air Quality Control Act” to “Colorado Air Pollution Prevention and Control Act.” In addition, the date references are removed.

The dates for monitoring and compliance periods are clarified, i.e. changed from “December – May” to “December 1 – May 31.” Monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. Nevertheless, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e., less than 6 months and less than 1 year).

A Note regarding when reports will be considered to have met the date due deadline is added.

Section I

Condition 1.1 is revised to reflect the new attainment status for the area.

Condition 1.4 is revised to reflect new Condition numbers for Section IV conditions.

Condition 1.5 is revised to reflect the renumbering of the cited condition to Section IV, Condition 22.

Condition 3 is revised to reflect the new attainment status of the area.

Condition 4 is revised based on comments by the EPA on other operating permits, the phrase “Based on information provided by the applicant” is added to the beginning of Condition 4.

Condition 5 is added for compliance assurance monitoring (CAM) provisions. The turbines at this facility use a control device to achieve compliance with an emission limitation or standard, therefore they are subject to the CAM requirements.

Section II

Language is added to all relevant conditions requiring records to be maintained for Division inspection upon request.

Condition 1.1 – Revised to only include facility wide emission limit requirements. All facility wide limits and language are moved from the individual unit conditions to this condition, to simplify the permit and delete repetitive language (sulfur fuel limit, heat content analysis, and NO_x and CO CEM requirement for the turbines/duct burners).

Condition 1.4 – The short term monitoring requirements are deleted from the language, because the CO short term limit from the Construction Permit was not included in the original operating permit, and the NO_x ppm emission limit must be monitored in accordance with Subpart GG requirements.

Conditions 2.2 and 3.2 – Because this limit is not a facility wide limit and only applies to the turbines and duct burners, it is moved to those respective conditions sections. In addition, language is revised to reflect the renumbering of the cited condition to Section IV, Condition 4.

Condition 2.1 contained information regarding the facility wide CO and NO_x limits and

CEM requirements. While the CEM requirements apply only to the turbines and duct burners, the limits apply for all units, therefore this information is moved to Section II, Condition 1.1. Condition 2.1 is revised to include only the turbine NSPS Subpart GG requirements. In addition, Condition 2.1 is revised to reflect the most recent version of Subpart GG.

Conditions 2.3 and 3.3 – Language is revised to indicate that, absent credible evidence to the contrary, compliance with the emission limits is assumed when Natural Gas, or No. 2 fuel oil is used.

Conditions 1.2 and 1.3 are revised to delete reference to specific ASTM Methods. Current Division policy is to not list specific methods, because methods may change.

Condition 2.6 is revised to specify complete Subpart A provisions, as well as to reflect current Appendix A language.

Conditions 2.7, 2.8, 3.7, 3.8, 4.3, 4.4, 5.3, 5.4 – Opacity language is revised to reflect the most current Regulation No. 1 language. In addition, language regarding when non-compliance with the standards occur is added, to reflect current Division policy. Summary tables are revised to clarify that the 30% limit applies during certain periods of operation. Note: For each stack, when a visible emission observation or Method 9 observation is performed to monitor compliance when burning fuel oil, such single observation meets the monitoring requirement for each opacity limit for which the stack is subject. For example, an observation performed for Condition 2.7.2 also serves to meet the monitoring requirement for Condition 2.9.2 (another observation is not required for Condition 2.9.2).

Condition 1.2 – The .85% sulfur content fuel limit is removed, because it has been superseded by the 0.3% limit.

Conditions 2.9 and 3.9 new fuel burning equipment is subject to the opacity limit set forth in Colorado Regulation No. 6, Part B, Section II.C. 3, therefore this requirement is added for the turbines and duct burners. (This is a **state-only** requirement)

The original operating permit did not include the opacity limit of NSPS Subpart Dc, because the Division believed it could be streamlined out. Subsequently, the Division has determined that the NSPS limit cannot be streamlined out because Regulation No. 1 allows 30% opacity during certain operating conditions. The 30% limit is NOT more stringent than the NSPS allowance of 27%, therefore the NSPS limit cannot be streamlined out, and Condition 3.5 is added. Note that the opacity COM requirements do not apply to these heaters because residual fuel oil is not used.

Section III – Permit Shield

The Title for Condition 1 is changed from “Specific Conditions” to “Specific Non-Applicable Requirements.”

For the original operating permit, and this renewal permit, certain requirements were streamlined out. A new Condition 3 is added to this section to provide the permit shield for streamlined limits.

Section IV – General Conditions

Add Common Provisions requirements as Condition 3. (All subsequent conditions are renumbered)

Insert “and” between the Regulation No. 3 and the C.R.S. citations in Condition 4.

Add Fugitive Emissions Condition 9.

Update Odor Regulation Cite for Condition 14.

Update the Open Burning Regulation cite for Condition 16.

Condition 21 citation of the next general condition is revised to reflect new general condition numbers. (changed from “21.d” to “22.d”)

Appendices

First Page of Appendices – The titles of Appendices B and C are revised. The phrase “except as otherwise provided in the permit” is added after the word “enforceable” in the disclaimer at the request of the EPA.

The EPA addresses in Appendix D are updated.

III. Compliance Assurance Monitoring (CAM)

Emission limitations or standards for which an Operating Permit specifies a continuous compliance determination method are exempt from CAM requirements (40 CFR Part 64, 64.2(b)(1)(vi)). The turbines at this facility use water injection to control NO_x emissions to an emission standard, however, the originally issued operating permit required the use of Continuous Emission Monitors to monitor NO_x emissions.

Therefore, the units are not subject to the CAM requirements of 40 CFR Part 64, as adopted by reference in Colorado Regulation No. 3, Part C.